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PRELIMINARY ENVIRONMENTAL REVIEW

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SOHIO MOATS 31-3 WELL
GALLATIN COUNTY, MONTANA

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BOARD OF OIL AND GAS CONSERVATION
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Preliminary environmental review : Soho



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PLEASE RETURN TO

DEPARTMENT OF NATURAL RESOURCES
AND CONSERVATION

BOARD OF OIL AND GAS CONSERVATION

TED SCHWINDEN, GOVERNOR

OIL AND GAS CONSERVATION DIVISION



STATE OF MONTANA

May 30, 1985

Dear Reader,

The Montana Board of Oil and Gas Conservation has completed its Preliminary Environmental Review (PER) of the proposed Sohio Moats #31-3 well in Gallatin County, Montana and has tentatively concluded that no Environmental Impact Statement need be prepared.

A copy of the PER is enclosed for your information. The Board encourages public comments on the PER, which must be received in writing postmarked no later than June 30, 1985. Please address your comments to the Helena office of the Board at the address noted below.

The Board will make its final decision on this matter as soon as possible after reviewing the public comments. Thank you for your interest and participation in our review of the proposed Sohio Moats #31-3 exploration well.

Yours sincerely,

MONTANA BOARD OF OIL AND
GAS CONSERVATION

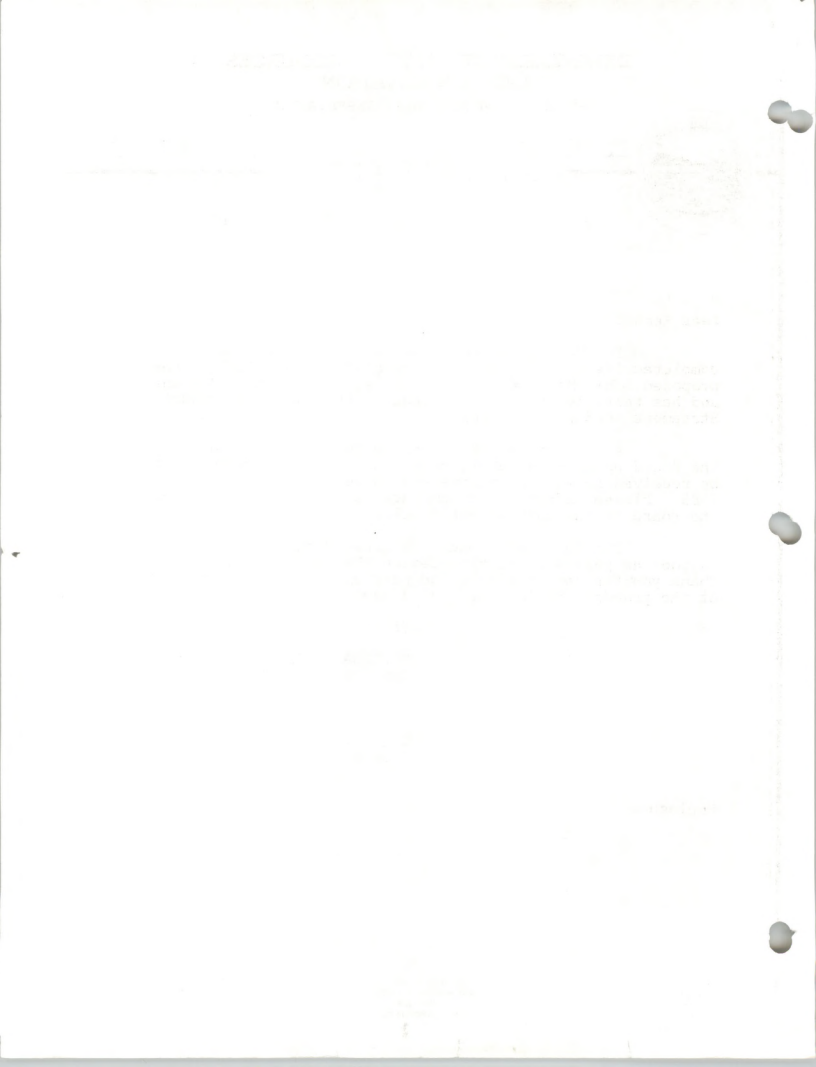
Dee Rickman
Dee Rickman
Executive Secretary

Enclosure

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INTRODUCTION

In October of 1984 Sohio Petroleum Company applied for and was granted a permit to drill an exploratory oil or gas well to a depth of 15,000 feet in the NE $\frac{1}{4}$ NW $\frac{1}{4}$ of Section 1, Township 2 South, Range 6 East, M.P.M., Gallatin County, Montana. That location is near the intersection of Bridger Canyon Road and Kelly Canyon Road and lies within the Bridger Canyon Zoning District established by the Gallatin County Commissioners in 1971.

The proposed well site is in an "Agriculture Exclusive District" within the zoning district and the drilling of an oil or gas well therein requires a conditional use permit.¹ Sohio has applied for such a permit but as yet it has not been granted.

On December 31, 1984, a group of property owners brought an action to require this Board to revoke Sohio's drilling permit and enjoin us from taking any further action to allow Sohio to drill this well. That suit was subsequently dismissed by stipulation when Sohio withdrew its application for a drilling permit for this well.

Thereafter, a bill to exempt the issuance of oil and gas drilling permits from the provisions of the Montana Environmental Policy Act was introduced in the Montana Senate but failed to pass.² Sohio then renewed its application and requested this Board to conduct a preliminary review as to the environmental effects of allowing Sohio to drill the well and determine if an environmental impact statement should be prepared.

We initiated our review by holding a public hearing in Bozeman, Montana on April 4, 1985. Expert consultants retained by Sohio testified in detail about the proposed well and the hazards it might present. Several residents of the area voiced their concerns about the well and its effect on their health, safety and quality of life. The residents testifying were not experts in the areas of inquiry but, as those most directly affected by the proposed well, they understandably seek assurance that Sohio's experts are correct in their assertions.

Since the hearing, the staff of this Board has critically reviewed the materials and testimony provided by Sohio and has consulted other sources to gather the information contained herein.

1. The proposed well.

Sohio proposes to drill a well to a total depth of 15,000 feet and to test the Eagle formation, which begins approximately 5,200 feet beneath the surface and the Madison formation which lies approximately 10,100 feet under the surface and again appears at a depth of about 12,500 feet.

A road approximately 1,500 feet long will be constructed from the Kelly Canyon road to the site and a 300 x 500 feet area will be leveled for construction of the drilling pad. A water well will be drilled to the Billman Creek formation at a depth of 550 feet. After this preliminary work is completed, the well will be started by a truck mounted drill which will drill a 26 inch hole to a depth of 60 feet. Thereafter, a large diesel-electric drilling rig will be brought to the site and assembled. This rig should begin drilling around the clock about 37 days after the preliminary site work begins and continue drilling for about four months to reach total depth.

2. Water

The drilling operation will use an average of 21,000 gallons of water per day or 14.6 gallons per minute. Water will be obtained from a well drilled to the Billman Creek Formation in the Livingston Group, which also supplies much of the domestic water in the area but at much shallower depths.' This is not a homogeneous formation and it is likely that one or more aquitards exist between the shallower domestic wells and the Sohio well. Even if communication does exist between the domestic wells and the Sohio well, the Sohio well should not adversely affect the other water wells in the area.'

The actual oil well will be cased and cemented through the Billman formation to a depth of 2,000 feet before drilling the remainder of the hole. This surface hole will be drilled with fresh water and there is no possibility of contamination of that aquifer from drilling operations.

Sewage will be pumped into holding tanks and periodically removed from the well site to a sewage disposal facility, eliminating the possibility of ground water contamination from that source.

Cuttings, drilling mud and waste will be held in the reserve pit, which will be lined with heavy plastic and later removed from the site.

In addition, Sohio has agreed to test wells within a one mile radius of the site and replace any wells, springs or ponds damaged by them as a condition to the grant of a conditional use permit by the Zoning Commission. The danger of any resident losing his domestic water supply is negligible.

3. Hydrogen Sulfide

Hydrogen sulfide is an extremely poisonous gas in relatively small concentrations and may be encountered at the depths the Sohio well will penetrate. All deep drilling rigs like the one which will be used to drill this well are equipped with effective blowout preventers so the possibility of the accidental uncontrolled release of any gas to the atmosphere is slight.

In Montana, 4,242 wells were drilled between 1979 and 1983 with only one blowout which did not involve hydrogen sulfide.⁵ In Alberta, Canada, of 43,661 wells drilled in the

overthrust belt (gas wells and dry holes) between 1960 and 1980, there were 83 blowouts, or less than 2 per 10,000 wells.⁶ The Livermore Report indicates that the risk of incurring an acute health effect such as unconsciousness, respiratory arrest, pulmonary edema or death from the accidental release of hydrogen sulfide gases from a natural gas well over a 20 year span ranges from 1 in 100,000 to 1 in a million.⁷

The persons most at risk in the event of a blowout of gas containing deadly quantities of hydrogen sulfide are the workers on the drilling rig who are in immediate proximity to the fumes. Federal regulations limit their exposure to a ceiling of 20 parts per million in an eight hour period or a maximum peak of 50 parts per million for ten minutes once if no other measurable exposure occurs.⁸ Both levels are well below the threshold level for acute effects of 300 parts per million.⁹

In the highly unlikely event of a blowout, no risk of hydrogen sulfide poisoning exists to the residents of the area. Energy Consultants, Inc. has correctly calculated a worst case scenario of the uncontrolled release of gas containing 23% hydrogen sulfide at a rate of 200 million cubic feet per day as

producing a ground level concentration of 300 parts per million hydrogen sulfide at approximately 220 feet from the well bore. The nearest residence is over 1000 feet away.¹⁰ A fire of the same gas would spread thermal radiation at the intensity which would cause second degree burns on people wearing normal clothing within five minutes of exposure a maximum of 270 feet.¹¹

This is truly a worst case scenario. Montana's only commercial gas field in the overthrust belt is the Blackleaf Field in Teton County. Its most productive well¹² was completed for an initial potential of 9.0 million cubic feet per day and a 0.12% concentration of hydrogen sulfide. The only other Montana overthrust well with gas shows in the Mississippian (Madison) formation is ARCO's Magee #1 well in Glacier County, now plugged and abandoned, which tested at a maximum rate of 939,000 cubic feet of gas per day and a hydrogen sulfide concentration varying up to a maximum of 2.0 per cent. Other wells in Montana's overthrust have encountered no hydrogen sulfide.¹³

Thus the chances of a blowout of gas at the rate and containing the hydrogen sulfide indicated in Energy Analysts worst scenario are extremely slight but even should it occur, no

real danger would be presented to occupants of nearby residences or to travelers on the Kelly Canyon road.

Most of the non-farm employed residents of the area commute to work by motor vehicle and their average driving time is 16.3 minutes one way.¹⁴ The Lower Bridger school near the well site has been closed for some time and school age children in the area are bussed to schools in Bozeman or to the Malmberg school near Bozeman Pass.¹⁵ The chances of being killed in a motor vehicle accident are approximately 200 per million or one in 5,000.¹⁶ The risk of death from a blowout of gas containing hydrogen sulfide is closer to one in two million, similar to the risk of being killed by lightning or an explosion of natural gas in the home.¹⁷

This minimal risk is further reduced by the safety and evacuation plan to be used by Sohio.¹⁸ No serious hazard is presented to the area residents by a blowout of hydrogen sulfide gas.

4. Noise

OSHA regulations require that the noise level at the drill site be no more than 90 decibels,¹⁹ which is almost the sound level of a gasoline power lawn mower. The diesel-electric drilling rig to be used at this site will be considerably quieter than that. Noise will be further reduced by the measures Sohio has agreed to undertake as a condition to its being granted a conditional use permit. Those agreed conditions, which address many of the concerns discussed in this report, are attached hereto.

Noise generated by drilling will not be health threatening and the minor annoyance it may cause is a temporary condition which should cease on completion of the well.

5. Traffic

Drilling the well will generate some additional traffic over the short stretch of the Kelly Canyon road between the Bridger Canyon road and the well site. Again, the agreed conditions on dust control and timing of truck movement satisfactorily answer most traffic concerns.

6. Earthquakes

The drilling rig and the pipe are capable of withstanding most anticipated seismic disturbances. We have found no evidence that drilling will induce earthquakes and therefore discount this possibility.

7. The Access Road

The 1500 foot road from Kelly Canyon road to the well site, as proposed, will be of a better quality of construction than most of the private access roads in the area and should present no danger of stream pollution or land slides.

8. Future Development

The Sohio prospect is a rank wildcat, some 80 miles from the nearest producing area. The odds are high that it will not be successful. In that event, the area will be restored and serenity will again descend upon the canyon. If hydrocarbons in commercial quantities are found, future development will depend on the quality and size of the reservoir. If either the Eagle or Madison formations prove to be gas bearing, initial development

will probably take place on the basis of one well per section with smaller spacing possible should reservoir conditions require it.

If oil is contained in either formation, initial development will be based on closer spacing, perhaps as much as one well per forty acres for the Eagle and one well per quarter section for the Madison.²⁰

A gas field will require the laying of pipe lines from each well to a central line and thence to a processing plant which Sohio has indicated would be located outside of the area. An oil field will involve the placement of storage tanks and the periodic trucking of the oil to a refinery. The amount of truck traffic generated would depend entirely on the quantity of production. If production is high, the oil might eventually be transported by pipe line.

9. Need for the well.

The United States is heavily dependent on petroleum, the domestic production of which has declined significantly in every major producing state save California and Alaska since

1970.²¹ Since 1972, this state's production has declined 9% and the number of jobs in petroleum extraction has decreased by 31%.²²

Oil is increasingly difficult to find and produce. Sohio has located what appears to be a promising prospect. If drilling proves productive both Montana and the United States will to an extent be enriched and less dependent upon foreign energy.

10. The quality of life.

The lighted drilling rig, the noise, and the increased traffic at the end of Kelly Canyon road will undoubtedly be annoying to many residents of the area for the short time these conditions occur. However, after drilling is completed and should a commercial well be found, production facilities will be far less obstrusive. The zoning commission can require masking of these facilities to blend in with the area, as has been successfully done in many residential areas in this country.

Approximately 85% of the land in the area has been leased for oil and gas exploration and development, mostly by those residents who still earn their living from the land as

farmers and ranchers. That living has not been a good one. The latest U. S. Census figures for this area show the average farm self employment income was only \$5,423 per year.²³ Depriving them of the opportunity to share in the relative affluence of their non-farm neighbors by producing oil and gas from their lands will do nothing for their quality of life.

While the area is zoned for one residence per forty acres, it is not developed in anything approaching that density. It remains primarily an area of farms and ranches with a few homes on small tracts abutting the major roads which traverse the area. Oil and gas development in the area may be its only hope of retaining that predominantly rural character.

With their crops and livestock providing an insufficient income, the area farmers must augment their earnings by developing their minerals or selling their land in forty-acre parcels. Exercise of the first option will change the canyon much less than will the second choice. Hundreds of forty acre ranchettes with the attendant pollution, traffic, noise, roads and businesses will irretrievably alter the character of this area. Drilling of this well and even intensive future development should oil and gas be found is far more compatible with the quality of life the area's residents now enjoy.

11. Other concerns.

In the preceding comments, the Board believes it has adequately addressed all of the concerns expressed to it by residents of the area and other interested persons. The proposed well presents no unique problems because of its location or depth. It should not adversely affect air quality or wild life. If it proves a failure, the area will be restored to its original condition. The alternatives to the proposed action are discussed above as are the other items listed in Section 75-1-201 (c), MCA.

CONCLUSION

The Board concludes that issuance of a permit to Sohio to drill its Moats #1-3 well in the NE $\frac{1}{4}$ NW $\frac{1}{4}$ of Section 1, Township 2 South, Range 6 East, M.P.M. Gallatin County, Montana is not a major action of State government significantly affecting the quality of the human environment and no environmental impact statement is required.

The Board will accept written comments on this Preliminary Environmental Review until June 30, 1985. After reviewing said comments, it will issue its final decision on this matter as soon thereafter as possible.

FOOTNOTES

1. Bridger Canyon Zoning Ordinance, Section 5.3 and attached map.
2. Senate Bill 410, 49th Montana Legislature.
3. Bonnie K. Moore, "Controls on Ground Water Availability and quality. The Bridger Canyon Area, Bozeman Montana," unpublished 1984 Master of Science thesis on file at Montana State University, Bozeman, Montana.
4. Freeze and Cherry, Groundwater, pp. 314-331 (1984); Montana Bureau of Mines and Geology Bulletin No. 47 (1965); U.S.G.S. Professional Paper No. 708 (1979).
5. Robinson Resource Development Co., Carpenter #1 well located in Section 14, Township 18 North, Range 53 East, Dawson County, Mt.; Spudded 9-12-82, plugged 11-11-82, total depth--9,802 feet. The blowout was of non-flamable nitrogen gas probably from the Minnelusa formation at approximately 7000 feet.
6. Layton, Cederwall, Ricker, Shinn and O'Banion, Accidental Releases of Sour Gas from Wells and Collection Pipelines in the Overthrust Belt: Calculating and Assessing Potential Health and Environmental Risk, a report dated April 15, 1983 by the Lawrence Livermore National Laboratory for the U. S. Department of Interior (hereinafter referred to as the Livermore Report).

7. Id. at p. 96.
 8. 29 C.F.R. §1910.1000, Table Z-2.
 9. American Petroleum Institute, Research Publication 49, p. 4.
 10. Energy Analysts Safety Statement on Sohio Drilling Prospect dated April 22, 1985.
 11. Ibid.
 12. The #1-8 Blackleaf-Federal.
 13. ARCO's two wells near Helena and one well south of Livingston as well as Phillips well north of Belgrade, which is the closest well to the proposed Sohio well.
 14. 1980 census data for Enumerator District 1642 A.
 15. Gallatin County Superintendent of Schools.
 16. Starr, Risk and Risk Assessment by Society, presented at ENZITEC, Feb. 8-10-1977.
 17. Starr, Social Benefit versus Technological Risk, SCIENCE, Vol. 165, pp. 1232-1238, September, 1969.
 18. Oilfield Safety, Inc. Safety Program and Evacuation Plan.
 19. 29 C.F.R. § 1910.95, Table G-16.
 20. Board rules for spacing of oil wells in the absence of special field rules are one per 40 acres for oil wells less than 6,000 feet in depth, one per 160 acres for oil wells between 6,000 and 11,000 feet in depth, and one oil well per 320 acres for wells more than 11,000 feet deep. Gas wells, in the absence of special field rules, are limited to one well per formation per section, or 640 acres.
- MAR 36.22.702

21. Statement of Dr. Charles J. Mankin, Oklahoma State Geologist, before the Subcommittee on Energy Development and Applications of the House Committee on Science and Technology, March 6, 1985.
22. Ibid.
23. Footnote 13, supra.

CONDITIONS TO CONDITIONAL USE PERMIT

WATER:

1. Sohio shall contact all well and spring owners within one mile of the Moats #1 water well site to determine if they wish to have their well tested for quantity of flow and for water quality prior to the time Sohio begins drilling operations. Sohio shall also determine whether the owners of wells wish to have the water level in their wells measured. For those who indicate their desire to have their wells tested for water quantity, water quality and where possible for static water level the testing will be conducted by an independent concern acceptable to the individual well owner and acceptable also to Sohio, and the cost of the testing will be paid for by the Sohio Petroleum Company.
2. Outside the one mile radius, individual well owners may secure the same kind of testing of their water wells at their own expense prior to the beginning of drilling operations by Sohio Petroleum Company. The results of the tests should be filed with the BCPOA, Sohio and the Bridger Canyon Planning and Zoning Commission so that the record of well conditions is available to all parties concerned. If the owner of a well or spring believes that his well or spring has been damaged by the activities of Sohio and has had his well or spring tested after the damage occurs the test results should be supplied to Sohio immediately.
3. Sohio shall pay to repair or replace water wells, springs or ponds if the cause of the damage is the operation of the Sohio water well or Sohio's drilling operations. Sohio shall carry insurance with the Insurance Company of North America to cover this type of claim. Resolutions of claims shall be in the following manner:

A Committee of the following people shall be formed before Sohio begins drilling its water well:

- A. One Sohio Representative
- B. One Sohio Hydrologist (funded by Sohio)
- C. One BCPOA Representative
- D. One BCPOA Hydrologist (funded by BCPOA)
- E. One Bridger Canyon Planning and Zoning Commission member.

A request to review a water well problem can be submitted to this Committee. The Committee shall agree to review any request as expeditiously as possible. The well owner would make available to the Committee all prior test results performed upon the well. The Committee shall review all information provided to it with regard to the condition of the well prior to the commencement of Sohio's drilling operations and the loss of water flow or other damage that the owner believes is the result of Sohio's operations. If it is the decision of the Committee that the probable cause for the problem with the well or spring arises from the operation of Sohio's water well or from Sohio's drilling operations, the well or spring will be cleaned out, deepened or replaced as directed by the Committee and at Sohio's expense. Sohio shall provide an interim water supply to the owner of the well or spring from the time of the occurrence of the water loss until the water problem has been corrected. If it is the determination of the Committee that the operations of Sohio are the probable cause of the water loss, Sohio shall bear the entire cost of the corrective action. If on the other hand, it is the determination of the committee that the water loss was not a result of Sohio's operations, the individual well owner shall bear the cost of the corrective action.

4. Sohio shall investigate the possibility of acquiring a secondary supply of water for its drilling operations from some source other than an on site well.

5. Sohio shall cooperate with all governmental agencies that monitor the quality and quantity of water in Bridger Creek throughout the period of time when it is conducting its drilling operations. Under no circumstances shall Sohio utilize any water drawn directly from Bridger Creek.

SAFETY:

1. Sohio has hired or shall hire Oilfield Safety, Inc. ("OSI") to prepare a Safety Contingency Plan for the drilling of the Moats #1 well. OSI shall provide on site safety supervision and shall provide all safety equipment reasonably required to assure that the drilling operation is conducted in a safe manner. OSI shall come on the well site on a full time basis, 24 hours a day when the Moats #1 well has reached the 2000 foot level and when the surface pipe is set. OSI shall be present for all training prior to that time.
2. The safety plan shall be presented to all residents within a two mile radius of the well and to all other persons who have a proper interest in the operation. A full explanation of all safety practices and procedures shall be made to interested parties by OSI personnel and by Sohio personnel before the beginning of the drilling of the Moats #1 well.
3. An evacuation plan, evacuation routes, timing of evacuation, changes in the plan by season, check points, resident lists, telephone numbers, and all other relevant information shall be provided to each resident within a two mile radius of the well. The residents shall be informed of the plan provisions which relate to evacuation under blizzard conditions or any other special conditions. OSI and Sohio shall conduct a survey of the canyon residents to determine the special needs of any individuals for notification or evacuation. The safety plan shall be in completed form and presented to the area residents before Sohio begins its drilling operations.

4. Sohio shall review the safety plan with the County Sheriff's Department, the Montana State Highway Patrol, the Civil Defense Department and the Bridger Canyon Volunteer Fire Department and shall secure the cooperation of these agencies to assure proper traffic control during an emergency and to insure that all residents are accounted for in case of an evacuation.
5. Sohio shall install high volume type sirens to signal emergency conditions. The sirens shall be installed so as to provide sound coverage to an area within a two mile radius to the north and east of the well. Sohio shall also provide vehicles with mounted sirens as well as loud speaker systems to allow additional warning to residents. A land telephone line shall be installed to the well site so that telephone warnings may also be provided in the event of an emergency.
6. Safety equipment such as air packs and masks shall be provided to all residents within one mile of the well site. Sohio and OSI shall assure that all who receive the air packs are properly instructed in the use of the equipment. Should any residents within the one mile area refuse to accept the air packs or refuse to cooperate in the instructional activity the names of these residents shall be provided to the Bridger Canyon Zoning Commission. The safety equipment shall be provided to the residents at the time that OSI begins its full time service on location.
7. Sohio shall meet with members of the Bridger Canyon Volunteer Fire Department before drilling activities start to ensure that they are fully aware of Sohio's plans and of their role in those plans, if any.
8. Water hose connectors shall be installed on all on site water storage tanks.
9. A well site plan layout shall be provided to the Board of Oil and Gas Conservation and to the Bridger Canyon Zoning Commission. The site plan shall show the location of the flare pit and flare stacks. Both the flare pit and flare stacks shall be located on the south west corner of the

location. The flare pit and flare stacks each shall be equipped with propane auto igniters to assure that any gas which might be flared is actually burned.

10. Sohio shall compensate the owners of any domestic animals or livestock which are killed or injured as a result of H_2S inhalation from the activities of Sohio. Payment of the compensation shall be made by Sohio upon receipt of a certificate from a veterinarian stating that the cause of death was H_2S inhalation.

AIR QUALITY:

No garbage or other waste shall be incinerated on the location. All garbage shall be collected in an enclosed container and hauled to the Bozeman land fill or other disposal site as proper sanitation requires.

TRAFFIC/ROADS:

1. Sohio shall secure from the county and state road and highway departments the recommendations of those departments for traffic control signs and devices which should be installed on Bridger Canyon Road and on Kelly Canyon Road to provide for proper traffic control during Sohio's operations. Sohio shall cooperate with the road and highway departments to assure that the signs are properly installed and shall bear the cost of installation.
2. Dust retardant of a kind and quality approved by the U.S. Forest Service shall be spread upon Kelly Canyon Road from the junction at Bridger Canyon Road to the turnoff at the service road as well as upon the service road itself. The retardant shall be maintained upon these roadways as conditions require and throughout the duration of the drilling operations.

3. Sohio shall schedule all routine deliveries of supplies to the well site between the hours of 9:00 a.m. and 11:00 a.m. and the hours of 1:00 p.m. to 3:00 p.m. If operational needs require, some deliveries may be scheduled during the hours from 7:00 p.m. to 9:00 p.m. During periods of road construction or during the times when the rig and associated structures are moved to and from the well site, flagmen and traffic control signs and devices shall be utilized to assure safe operation.
4. Sohio shall assure that there will be no drilling-related traffic upon the Bridger Canyon Road and the Kelly Canyon Road at the time of school bus pick-up and drop-off, except in emergency situations, or in situations where the timing of deliveries is critical to drilling operations. In these situations as well as in its normal operations, Sohio shall exercise extreme care in order to avoid traffic accidents.
5. Sohio agrees that all drilling related traffic will use Bridger Canyon Road and Kelly Canyon road only up to the service road entrance, except in an emergency.
6. Sohio shall put clauses in all contracts and agreements with its suppliers and contractors which require compliance with all traffic control signs, school bus stops and all traffic laws while conducting business for Sohio. Sohio shall employ a gate guard at the entrance of the service road off of Kelly Canyon Road. In addition to other safety related activities at the site, this gate guard shall assist trucks on and off Kelly Canyon Road. Sohio shall notify the Montana Highway Patrol and/or the County Sheriff's Department prior to major truck movements, such as rig moves and shall solicit the assistance and advice of these departments in the conduct of these extraordinary traffic activities.
7. During the construction of the service road, drains and culverts shall be installed and shall be maintained. Since the service road is on the private

lands of Lloyd and Lucile Moats all road building activity shall meet with their approval.

NOISE:

1. If necessary Sohio shall assure that the generator sets on the drilling rig are adequate to reduce the noise levels at least to the noise level stated in the Shouse Report. If they will not interfere with the cooling function of the radiators, baffling devices shall be installed to reduce the noise of the cooling fans.
2. An 8 foot earthen berm shall be constructed on as much of the north and east side of the location as possible. Gaps to the east may be provided for safety reasons.
3. A noise baffle fence shall be constructed on top of the berm. It may be 4 to 5 feet high and may be designed to spill wind loads.
4. Machines such as front end loaders and snow removal devices which are operated upon the drilling location shall be equipped with proper and workable motor mufflers.
5. Signs limiting the use of Jake brakes shall be posted at appropriate places on roads and highways in accordance with directions given by the state and county road departments.
6. Sohio shall assure that the drilling contractor shall fabricate and utilize as many bumpers or pads as safety will allow and for the purpose of minimizing the noise impact associated with pipe handling.
7. After the rig is in operation, Sohio shall monitor the noise level of the drilling rig, and if the noise level is not in line with the Shouse Report projections, additional noise controls shall be installed.

RIDGE STABILITY:

1. Sohio shall avoid cutting trees and other vegetation, unless the cutting is necessary to comply with the conditions of the Conditional Use Permit or is necessary for safety reasons.
2. The access roadway shall be constructed in general accordance with the recommendations of John Montagne as contained in the Shouse Report.
3. Road construction shall be conducted in such a manner as to minimize erosion.

SEWAGE:

All sewage from the trailers on location and at the gate guard station shall be put into holding tanks and hauled to a disposal station in Bozeman or at some other suitable location. Portable toilets which are self-contained shall be provided for use of the crews and other people who may be on the location. The sewage from these shall be chemically controlled and hauled from the drilling site to a sanitary disposal site in Bozeman or some other suitable location.

RESERVE PIT:

1. The reserve pit shall be constructed on the southeast corner of the location.
2. The reserve pit shall be constructed on a cut area and shall be lined with the highest quality synthetic liner available for reserve pit use.
3. The reserve pit shall be fenced on the three sides away from the rig.

RECLAMATION:

1. Prior to plugging and abandonment, Sohio shall secure instructions from the State Board of Oil and Gas Conservation on the manner in which the well should be plugged. Sohio shall then follow the instructions of the State Board. The State should have a representative on site to see that the well is properly plugged and abandoned. Sohio shall send BCPOA a copy of the notice which Sohio will give to the State, if the well is to be plugged.
2. Sohio shall secure the services of an independent contractor to evaporate and close the reserve pit. Sohio shall maintain a mud system which will put a minimum amount of fluid into the reserve pit and which must then be evaporated. During its operations, Sohio shall reused as much of the drilling fluid as is reasonably possible. If the well is abandoned, Sohio shall evaporate the fluids as soon as weather permits. After evaporating the fluids from the pit and prior to closing the pit, the solids which remain in the pit shall be sampled and analyzed and the results shall be furnished to the Board of Oil and Gas Conservation and to the Bridger Canyon Zoning Commission for review by each agency. If the analysis discloses that any of the materials remaining in the reserve pit are toxic, the toxic materials shall either be neutralized on site in accordance with procedures established by the Board of Oil and Gas Conservation and the Bridger Canyon Planning and Zoning Commission or shall be hauled from the site to a toxic waste disposal location. If the analysis discloses that none of the materials in the reserve pit are toxic, the solids shall be spread over the bottom of the reserve pit and dry material from the location shall be mixed with this material so that the solids can be compacted. Unless unusual conditions require some other practice, the pit liner shall be folded over the pit and a native clay cap shall be spread over the pit and compacted. The site location shall then be leveled or recontoured under the direction of Lloyd and Lucile Moats. Sohio shall ensure that reclamation activity is completed to the satisfaction of the State Board of Oil and Gas Conservation and to Lloyd and Lucile Moats.

3. Reseeding of all of the areas disturbed during the drilling activities and the construction and use of the road shall be done in the manner directed by Lloyd and Lucile Moats. The drill site will be recontoured and reshaped in the manner that Mr. and Mrs. Moats request. Sohio shall either return the access roadway to its original contour or shall leave the access roadway in place as directed by Mr. and Mrs. Moats. All traffic signal and warning devices shall be removed after the completion of drilling activity and in cooperation with the Montana Highway Patrol and the County Road Department.
4. If the well is completed as a producing well, all production equipment shall be screened or camouflaged to the reasonable satisfaction of the Board of Directors of the Bridger Canyon Property Owners Association.
5. Reclamation activity shall be timely and in accordance with agreement with Lloyd and Lucile Moats.

POLICING PROCEDURES/VIOLATIONS:

1. The Zoning Commission may appoint one or more persons to visit the well periodically to assure that there are no violations to the Conditional Use Permit. Sohio shall assure that these persons are provided access to the well site so long as notice of the visits to the well site is provided to Sohio in advance and in accordance with safety requirements. Sohio shall cooperate with the Zoning Commission and the Board of Oil and Gas Conservation to assure compliance with all conditions of the permit and compliance with state law.
2. The Conditional Use Permit that is issued to Sohio shall be for the use and benefit of that company only and may not be assigned or transferred to any other company or entity.